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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/883,275	06/19/2001	Michio Yamazaki	Q64943	9438

7590 09/25/2003

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EXAMINER

LEE, RIP A

ART UNIT

PAPER NUMBER

1713

DATE MAILED: 09/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/883,275

Applicant(s)

YAMAZAKI ET AL.

Examiner

Rip A. Lee

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 3-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) 1-22 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This office action follows a response filed on July 15, 2003. Applicants have amended claim 1 to correct matters of form.

Claim Objections

1. Claim 1 is objected to because of the following informalities: The claim recites "the repeating units" on line 6. Whether this refers to repeating units of formula (3), repeating units of formula (1), or both sets of repeating units needs to be clarified. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim is drawn to a polymeric substance in which the total number of repeat units of formula (1) and (3) is 50 mole % or more. However, the remaining portion of the polymeric substance is not elucidated. The unspecified region may be conjugated or non-conjugated, and this would have bearing on the spectral properties of the polymer.

According to Applicants, "the remaining portion of the polymer may be any suitable substance." As such, it is no longer clear whether the remaining portion of the polymeric substance is even polymeric. Supposing that the remaining portion of the claimed material is indeed polymeric, it is not clear whether said remaining portion is made from other arylene vinylene units, butadiene units, ethylene units, tetrafluorethylene units, polyamide, polyester, cellulose, or protein, all of which would qualify as "any suitable [polymeric] substance." Enablement issues aside, in this case, the claim is indefinite because it is broad.

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Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 6,458,909 to Spreitzer *et al.*

The prior art of Spreitzer *et al.* relates to polymers containing aryl substituted poly(*p*-arylenevinylene) units, as shown in formula (I) of claim 1. The arylene moiety bears one or more substituents R' which represents a C₁₋₂₀ alkoxy group. Example E10 describes the synthesis of 2,5-*bis*(chloromethyl)-4-methoxy-3'-(3,7-dimethyloctyloxy)biphenyl, a precursor to a monomer unit whose structure satisfies the structural features recited in present claim 1. Therefore, use of the claimed substance would have been obvious to the skilled artisan who had read Spreitzer *et al.*

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The polymers of the invention may be comprised of 2-10,000 of such repeat units (claim 2), but the invention also encompasses copolymers consisting of repeating units of formula (I) with other repeat units (col. 3, lines 26-36, claim 6). It is obvious to the skilled artisan that polymers having on order of 10,000 repeat units possesses a number average molecular weight of at least 50,000 as presently claimed.

Spreitzer *et al.* does not limit inventive polymers to contain 0.1-15 mole % of aryl substituted poly(*p*-arylenevinylene) repeat units. As such, it is maintained that would have been obvious to one having ordinary skill in the art to arrive at this particular comonomer content, especially in view of the fact that copolymer A9 contains 18 wt % of aryl substituted poly(*p*-arylenevinylene) units. Furthermore, it has been deemed that the discovery of optimum values of result-effective variables in a known process is within the level of ordinary skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

The prior art is silent with respect to the absorption edge wavelength of homopolymers made from individual monomers. However, in view of the fact that Spreitzer *et al.* teaches monomer units which are the same as those presently claimed, a reasonable basis exists to believe that the homopolymers prepared therefrom would exhibit the claimed spectral features. Since the PTO can not perform experiments, the burden is shifted to the Applicants to establish an unobviousness difference. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

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7. The rejection of the recitation "heterocyclic group" in claim 1 under 35 U.S.C. 112, second paragraph has been withdrawn in view of details provided in the specification.

8. The rejection of claim 1 under 35 U.S.C. 102(e) as being anticipated by Spreitzer *et al.* has been withdrawn.

9. The prior art made of record but not relied upon is considered pertinent to the Applicant's disclosure. The following references disclose structures of aryl substituted poly(*p*-arylenevinylene) monomer units.

U.S. Patent No. 5,945,502 to Hsieh *et al.*


U.S. 2001/0041269 to Berntsen *et al.*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (703)306-0094. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (703)308-2450. The fax phone number for the organization where this application or proceeding is assigned is (703)746-7064. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

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September 17, 2003



DAVID W. WU
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